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CLAIMS

What is claimed is:

1. A method comprising:

programming an associative memory with a plurality of sets of entries, each of the plurality of sets of entries associated with a different one of a plurality of unique decoder fields, and each entry within a particular one of the plurality of sets of entries including a same one of the plurality of unique decoder fields;

receiving a piece of information including a data item and a decoder value; deriving a first lookup word including the data item and the decoder value; and performing a lookup operation on the associative memory using the first lookup word to generate a first lookup result.

- 2. The method of claim 1, wherein a first set of the plurality of sets of entries includes a different number of entries than a second set of the plurality of sets of entries.
- 3. The method of claim 1, wherein the decoder value includes a set value and a subset value.
 - 4. The method of claim 1, further comprising:

receiving a second piece of information including a data item and a nested condition indication;

identifying the nested condition;

generating a plurality of lookup words in response to said identifying, each of the plurality of lookup words including the data item and one of a plurality of predetermined decoder values.

5. A method comprising:

programming an associative memory with a plurality of sets of entries, each of the plurality of sets of entries including a different one of a plurality of unique decoder fields;

receiving a piece of information including a data item;

identifying a nested condition associated with the data item;

in response to said identifying the nested condition, generating a plurality of lookup words with a predefined set of decoder fields of the plurality of unique decoder fields.

- 6. The method of claim 5, wherein the piece of information includes a nested condition indication.
 - 7. The method of claim 5, wherein the piece of information does not include a nested condition indication.
 - 8. The method of claim 5, wherein at least two of the plurality of sets of entries have a different number of entries.
- 9. The method of claim 5, wherein each of the plurality of entries has at least two entries.
 - 10. The method of claim 5, further comprising forwarding a lookup indication to a receiver.
- 11. The method of claim 10, wherein the lookup indicator indicates the presence or absence of the nested condition.
 - 12. The method of claim 10, wherein the lookup indicator indicates a result context.

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- 13. The method of claim 5, further comprising forwarding the plurality of lookup words to an associative memory.
- 14. The method of claim 13, wherein the associative memory includes a ternary or binary content-addressable memory.
- 5 15. A computer-readable memory containing computer-executable instructions for performing the method of claim 5.
 - 16. The method of claim 5, further comprising performing a lookup operation on each of the plurality of lookup words to generate a plurality of lookup results.
- 17. The method of claim 16, further comprising comparing a first lookup result of the plurality of lookup results with a second lookup result of the plurality of lookup results to identify whether to perform processing based on the first or second lookup result.
 - 18. A method for programming an associative memory, the method comprising: performing for each particular one of a plurality of associative memory spaces:

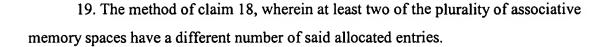
determining a size for said particular one of the plurality of associative memory spaces;

allocating at least the size number of entries for said particular one of the plurality of associative memory spaces;

assigning a unique decoder field to said particular one of the plurality of associative memory spaces; and

adding said at least said size number of entries in the associative memory, wherein each of said at least said size number of entries includes the unique decoder field.

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20. An apparatus comprising:

a lookup word generator for receiving a data item and for generating a plurality of lookup words, each of the plurality of lookup words including the data item and a different one of a plurality of unique decoder fields;

an associated memory, coupled to the lookup word generator, for performing a lookup operation of each of the plurality of lookup word and to produce a plurality of associative memory results.

- 21. The apparatus of claim 20, further comprising: a memory, coupled to the associative memory, to receive the plurality of associative memory results and to generate a plurality of memory lookup results.
 - 22. The apparatus of claim 21, further comprising a receiver to receive the plurality of memory lookup results; and

wherein the lookup word generator further communicates a lookup indication to the receiver.

- 23. The apparatus of claim 20, further comprising a receiver to receive the plurality of associative memory results.
- 24. The apparatus of claim 23, wherein the lookup word generator further communicates a lookup indication to the receiver.
 - 25. The apparatus of claim 23, wherein the receiver compares a first associative memory result of the plurality of associative memory results with a second associative memory result of the plurality of associative memory results.

26. The apparatus of claim 25, wherein a result of said comparison of the first and second associative memory results determines the first associative memory result is to be processed.

27. An apparatus comprising:

means for programming an associative memory with a plurality of sets of entries, each of the plurality of set of entries including a different one of a plurality of unique decoder fields;

means for receiving a piece of information including a data item;
means for identifying a nested condition associated with the data item;
means for generating in a plurality of lookup words with a predefined set of
decoder fields of the plurality of unique decoder fields.

- 28. The apparatus of claim 27, wherein the piece of information includes a nested condition indication.
- 29. The apparatus of claim 27, further comprising means for forwarding a lookup indication to a receiver.
 - 30. The apparatus of claim 29, wherein the lookup indicator indicates the presence or absence of the nested condition.
 - 31. The apparatus of claim 27, further comprising associative memory means for receiving the plurality of lookup words and for generating a plurality of lookup results.